

2026 Workshop: Auroral Science with Heterogeneous Datasets + Rockets!

Long title

Auroral science and studies of coupled MIT dynamics using sounding rockets and hybrid heterogeneous data techniques

Conveners

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Description

This workshop focuses on ionospheric responses in the auroral zone contributing to system-science characterizations of the coupled magnetosphere-ionosphere-thermosphere (MIT). The heterogeneous nature of this response requires the use of a variety of observations from diverse platforms. Recent and ongoing development of new tools for incorporating data from distributed multi-instrument, multi-platform heterogeneous sources is facilitating improved understanding of auroral dynamics, new science from combining observations in novel ways, and the inclusion of these derived datasets into state-of-the art models and data assimilation techniques. This session will particularly emphasize recent results from the 2026 sounding rocket campaigns out of Poker Flat, Alaska, and how they benefit from these heterogeneous tools.

This workshop aims to gather interested members of the community together to share recent research and discuss results and future developments in a collaborative setting. It will be structured as a series of short (3-5 minute) presentations within a shared slide deck that highlight recent research with significant time at the end for moderated group discussion. Anyone interested in showing a few slides should contact the conveners so topics can be grouped and organized in advance, but all are welcome to participate in the open discussion!

Justification

This workshop will bring together community efforts to study auroral dynamics. It will highlight new and developing tools for system level ionospheric science studies. The auroral examples and science questions explored here have substantial synergy with other projects; they illustrate many of the systems science questions highlighted in recent CEDAR community documents, in the context of auroral ionospheric physics. Additionally, it will further discussions on challenges and shortcomings in the present CEDAR data infrastructure and identify potential solutions as the use of heterogeneous data for advancing science becomes more common. This has been a very successful session the last several years running with ample participation and discussion from both students and the broader community.

Related to CEDAR Science Thrusts:

Encourage and undertake a systems perspective of geospace

Develop observational and instrumentation strategies for geospace system studies

Manage, mine, and manipulate geoscience/geospace data and models

Workshop format

Short Presentations

Round Table Discussion

Keywords

aurora, coupling, heterogeneous data, ionospheric modeling

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